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Munyaradzi CHITAKIRA[1]& Emmanuel TORQUEBIAU[1,2]

[1] Centre for Environmental Studies
University of Pretoria
Pretoria, 0002
South Africa
mchitakira@zoology.up.ac.za

[2] CIRAD, UR 105, F34398, Montpellier, France
emmanuel.torquebiau@cirad.fr

Abstract – In order to achieve biodiversity conservation and agricultural production goals at the same time and in the same space, there is a need to assess the functioning of rural land at the landscape level. This paper reports on the outcome of a landscape performance assessment in northern KwaZulu-Natal province of South Africa. Performance assessment is a way of keeping track of the status of a particular landscape and is useful for planners and other stakeholders when deciding which goals to pursue for improving the landscape's performance. We facilitated three group meetings for farmers and a fourth one for practitioners from key stakeholder institutions operating in the community. The landscape was rated on four aspects, namely conservation, production, livelihood and institutions goals. The overall mean rating was 2.97 out of a maximum rating of 5 implying that the landscape was generally performing fairly well. For various reasons however, the mean ratings for individual goals and sub-goals varied, both between and within stakeholder groups. We found the area to be an informal ecoagriculture landscape with a good potential for transformation into formal landscape-level management processes involving farmers and other stakeholders to support more ecosystem services and better living standards for its inhabitants.

Key Words: Ecoagriculture, landscape, livelihoods, performance assessment, stakeholders

Résumé – Afin d'atteindre des objectifs simultanés de protection de la biodiversité et de production agricole dans un espace donné, il est nécessaire d'analyser le fonctionnement des espaces ruraux à l'échelle du paysage. Le présent article relate les résultats d'une évaluation de la performance d'un paysage au Nord de la Province du KwaZulu-Natal, en Afrique du Sud. L'évaluation de la performance est un moyen de décrire le statut d'un paysage donné. Elle est utile aux personnes chargées de la planification et à d'autres acteurs en tant qu'aide à la décision en ce qui concerne les objectifs à atteindre pour améliorer la performance du paysage. Des ateliers de groupe avec des agriculteurs locaux et d'autres acteurs d'institutions clés nous ont permis d'effectuer un classement de la performance du paysage en fonction de 4 critères : protection, production, conditions de vie et institutions. La note globale obtenue est de 2,97 / 5, indiquant que le paysage en question a une bonne performance, au dessus de la moyenne. Les notes individuelles par objectif et par groupe d'acteurs montraient cependant une assez grande variabilité. Le paysage

analysé peut être qualifié de paysage d'écoagriculture ayant un fort potentiel pour que soient mis en œuvre des processus de transformation et de gestion à l'échelle du paysage reposant sur la participation des agriculteurs et d'autres acteurs. De tels processus peuvent améliorer la fourniture de services environnementaux et les conditions de vie des habitants.

Mots clés : Ecoagriculture, paysage, conditions de vie, évaluation de la performance, acteurs

INTRODUCTION

The world today is faced with a challenge to achieve biodiversity conservation and agricultural production goals at the same time and in the same space (McNeely and Scherr, 2003). Approaches for biodiversity conservation need to go beyond the focus on protected areas because strict protection regimes which deny communities access to resources around them do not work (Buck et al. 2007). Ecoagriculture which is a fully integrated approach to agriculture, conservation and rural livelihoods can answer this challenge (Scherr and McNeely, 2007). Ecoagriculture can improve agricultural production and human livelihoods while conserving biodiversity and the natural resource base. The goal of ecoagriculture is to integrate *at a landscape level*, all the interacting components such as soil, water, plants, animals, climate and human beings into one system. If formally implemented, ecoagriculture can lead to the sustainable management of landscape mosaics that are balanced in terms of food production, environmental protection and human livelihoods. However, success in the adoption of new innovations such as ecoagriculture is largely depended on farmers' perceived benefits of the innovations. Research has revealed that one of the main reasons for low adoption rates is when farmers do not get immediate benefits from introduced innovations (Tarawali et al. 2002). Engaging farmers and other key stakeholders in planning for ecoagriculture projects can contribute a great deal towards giving the farmers insights into the benefits of the projects.

Ecoagriculture operates at a landscape level. A landscape is understood as a broad geographical construct that includes the biophysical, social, political, psychological and other components of an area (Farina, 2006 cited by Sayer et al. 2007). In spatial terms a landscape may extend over several villages or beyond a single administrative unit. A healthy and sustainable landscape is one that is multi-functional or can perform several functions at the same time (Wiggering et al. 2003). Some of the functions include agricultural production, natural resource extraction, environmental functions (soil and biodiversity protection, water protection and purification), buffering capabilities for matter and energy, mitigation of extreme weather events like floods and drought, recreational, educational and cultural roles. Landscape functions are not always compatible as they may conflict, particularly because a landscape may perform different functions for different stakeholders (Heilig, 2003). The challenge is to balance these functions, hence the need for performance assessment of any given landscape.

Performance assessment is a way of keeping track of the status of a particular landscape. It reveals the dimensions of the landscape that are performing well and those performing poorly, an insight useful for planners and other stakeholders in deciding which goals to pursue for improving the landscape's performance (Ecoagriculture Partners, 2007). Our study whose broader aim was to investigate the feasibility of ecoagriculture in a communal area in KwaZulu-Natal province of South Africa sought to investigate how the landscape was performing. Such knowledge would guide ecoagriculture planning for the landscape.

The study employed participatory approaches as a strategy of engaging local communities and other stakeholders in assessing the existing status and as a foundation for informed decision-making and landscape level planning. What motivated us was the fact that involving local communities in decision-making and planning resource utilisation promotes sustainable management, minimises conflict and maximises equitable benefit sharing (Evans et al. 2006). In

addition, indigenous people know their territory better than anyone else (Napolitano and MacLennan, 2008). Participation helps to create a sense of ownership among intended beneficiaries and to ensure that development interventions are effective and sustainable (Sanginga and Chitsike, 2005). Farmers have their needs and priorities and engaging them in development planning is an effective way to incorporate their sentiments and vision of the future.

This paper is based on primary data collected over the period from 2008 to 2010. Our study could be the first effort in South Africa to assess the performance of a particular landscape with respect to ecoagriculture. We adopted the *Landscape Performance Scorecard (LPS)*, a tool designed by Ecoagriculture Partners (Buck et al. 2006) and adapted it to the local situation.

Our objective was thus to facilitate a landscape performance assessment (LPA) by key stakeholders to the community under focus. The LPA was intended to present a forum for stakeholders to think and talk about a landscape in which it is desirable to conserve biodiversity, deliver ecosystem services, sustain agricultural production and secure livelihoods of the local people. The participants would assess the current status of their landscape and evaluate how well it was performing relative to conservation, production, livelihood and institutions goals.

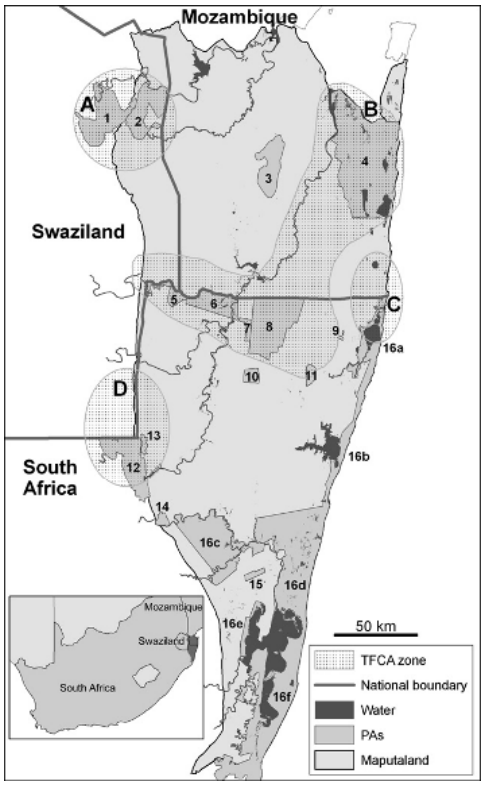
STUDY AREA

The study was conducted in a peasant farming community at the extreme North of KwaZulu-Natal Province in South Africa (26°48'S to 26°54'S and 32°00'E to 32°09'E). The area, known as Mathenjwa Tribal Authority (MTA), covers approximately 547 km^2 of which 19% is under Ndumo Game Reserve which is managed by a provincial nature conservation body (Ezemvelo KwaZulu-Natal Wildlife). A further 6.4% is under Usuthu Gorge Community Conservancy Area (UGCCA) managed by the community.

MTA falls into the subtropical savannas biome (Mucina and Rutherford 2006) with an annual rainfall of between 500 mm in the eastern lowlands (around 100 m ASL) and 800 mm in the western highlands (about 600 m ASL). Most of the rainfall is received in summer from November to March but light rains are occasionally received during winter. Its mean annual temperature is around 21^oC with summer maximum temperatures getting up to 40^oC. Thus the area is generally dry and warm to hot throughout the year.

MTA lies in Maputaland Centre (Figure 1), an ecological region of floristic endemism and a globally recognised biodiversity hotspot (Van Wyk and Smith, 2001). It is crucial to conserve the biodiversity of this area which harbours many endemic plants and some of the most endangered vegetation types in South Africa, classified as vulnerable (Mucina and Rutherford 2006). A trilateral protocol signed in June 2000 by South Africa, Mozambique and Swaziland (SADC 2006) made MTA part of Lubombo Transfrontier Conservation Area (TFCA). A TFCA is an area or a component of a larger ecological region that straddles the boundaries of more than one country, encompassing one or more protected areas and multiple resource use areas (SADC, 1999). TFCAs can be conservation areas and human habitats at the same time and thus are attractive to ecoagriculture innovations. The need to attain integrated production and conservation landscapes explains why part of MTA has been set aside for the UGCCA (Halkett-Siddall, 2007).

Figure 1: Location of Study Area



KEY – TFCA zones are labelled alphabetically and PAs are labelled numerically:
A = Lubombo-Goba, B = Usuthu-Tembe-Futhi, C = Kosi Bay-Ponta do Ouro,
D = Nsubane–Pongola; 5 = Usuthu Gorge Community Conservation Area,
6 = Ndumo Game Reserve (GR), 7 = Bhekabantu CCA, 8 = Tembe Elephant Park
Source: *(adapted from Smith et al. 2008).*

While it is a biodiversity hotspot Maputaland also has some of southern Africa's poorest people, who have traditionally depended significantly on harvesting natural resources (Soto el. 2001 cited by Smith et al. 2008). Oral traditions say that over the past fifty years, the people of Mathenjwa have gradually transformed from subsistent nomadic pastoralism and shifting cultivation into sedentary peasant farming. The reasons for this dramatic change can be traced back to the isolation and restricted movements of the apartheid era. Being a former homeland MTA suffered from the effects of racial segregation under the apartheid regime and has lagged behind in economic development. Its poor inhabitants are putting biodiversity under threat as they strive to meet their basic livelihood needs.

METHODS

The landscape performance assessment (LPA) was achieved through engaging stakeholders to evaluate the performance of the entire MTA landscape with respect to ecoagriculture goals. Participants were asked to complete a Landscape Performance Scorecard (LPS) adapted from Ecoagriculture Partners (2008) and translated into the local language, *isiZulu,* to ensure the participation of many stakeholders who could not communicate in English. The LPS (see Annex) has 20 questions related to 20 criteria (or sub-goals) divided into four groups based on four goals, that is, conservation, production, livelihood and institutions. Participants awarded a score for each dimension of the landscape based on their perception of how well it was performing.

For the purpose of this study we divided the study area into three zones: lower zone (low-lying gently sloping plain, around 100m in altitude), upper zone (dissected plateau, about 500-600m) and middle zone (rugged and mountainous transitional area around 400m, between lower and upper zones). Each of the three zones was divided further into two sub-zones, one adjacent to the protected areas and the other further away. The zoning was intended to capture possible variations in biophysical aspects, household characteristics as well as individual and group perceptions across the subzones.

In the process we facilitated three group meetings for farmers, one in each zone. Each group was subdivided into smaller working groups of 3 to 6 participants based on gender, age and home area of each participant. We organised a fourth group meeting for officials from key public and private stakeholder institutions operating in or providing services to the community. To identify the key stakeholder institutions to invite for this exercise we used results from a stakeholder analysis carried out during an earlier phase of the study (Chitakira and Torquebiau, 2009). The officials, fourteen in all, were grouped for the convenience of the landscape performance rating exercise. Group A comprised of practitioners in the fields of health, education, community development, administration (local municipality) and churches. Practitioners in biodiversity conservation, environmental management and agriculture were in group B while in group C were representatives for UGCCA, local entrepreneurs and practitioners in tourism.

RESULTS AND DISCUSSION

Landscape performance ratings

There were five questions on each goal and against each question a score was awarded. The five scores were averaged to get a mean rating for each goal. Averaging these mean ratings would give an overall performance rating for the landscape. Table 1 presents detailed results of the assessment by all four stakeholder groups and their sub-groups. Group 1 = lowland, 2 = middle zone, 3 = upland and 4 = multiple stakeholders. The highest score for each goal is shown in bold while the lowest is bold and italicised.

Table 1: Landscape Performance Scores

Group	Stakeholder	Conservation	Production	Livelihood	Institutions	Average
1	Magwanga Youths	3.5	2.8	1.9	4	3.05
1	Magwanga Women	**4.6**	**3.9**	2.9	**4.2**	**3.9**
1	Magwanga Men	3.6	2.4	3	2.6	2.9
1	Mbadleni (W,M,Y)	3	2.4	3.2	**4.2**	3.2
1	Madeya (W,M,Y)	3	2.4	3.2	**4.2**	3.2
2	Mabona Women	3.6	1.9	2.1	***1.6***	2.3
2	Mabona Men	4.2	3.2	3	3.4	3.45
2	Khume Women	***2***	2	1.4	2.4	***1.95***
2	Khume Men	4	3	3.4	3.2	3.4
3	Plateau Youths	3.4	2.9	**3.6**	3.2	3.28
3	Plateau Younger Women	3.2	3	**3.6**	3.8	3.4
3	Plateau Elderly Women	4.2	3.9	3.2	**4.2**	3.88
3	Plateau Men	2.1	1.7	1.5	2.9	2.05
4	Experts Group A	3.1	2.7	2.2	2.5	2.63

4	Experts Group B	4.2	***1.6***	***1.2***	3.2	2.55
4	Experts Group C	3.3	2.3	2	2.2	2.45
	Mean rating	**3.44**	2.63	***2.59***	3.24	*2.97*

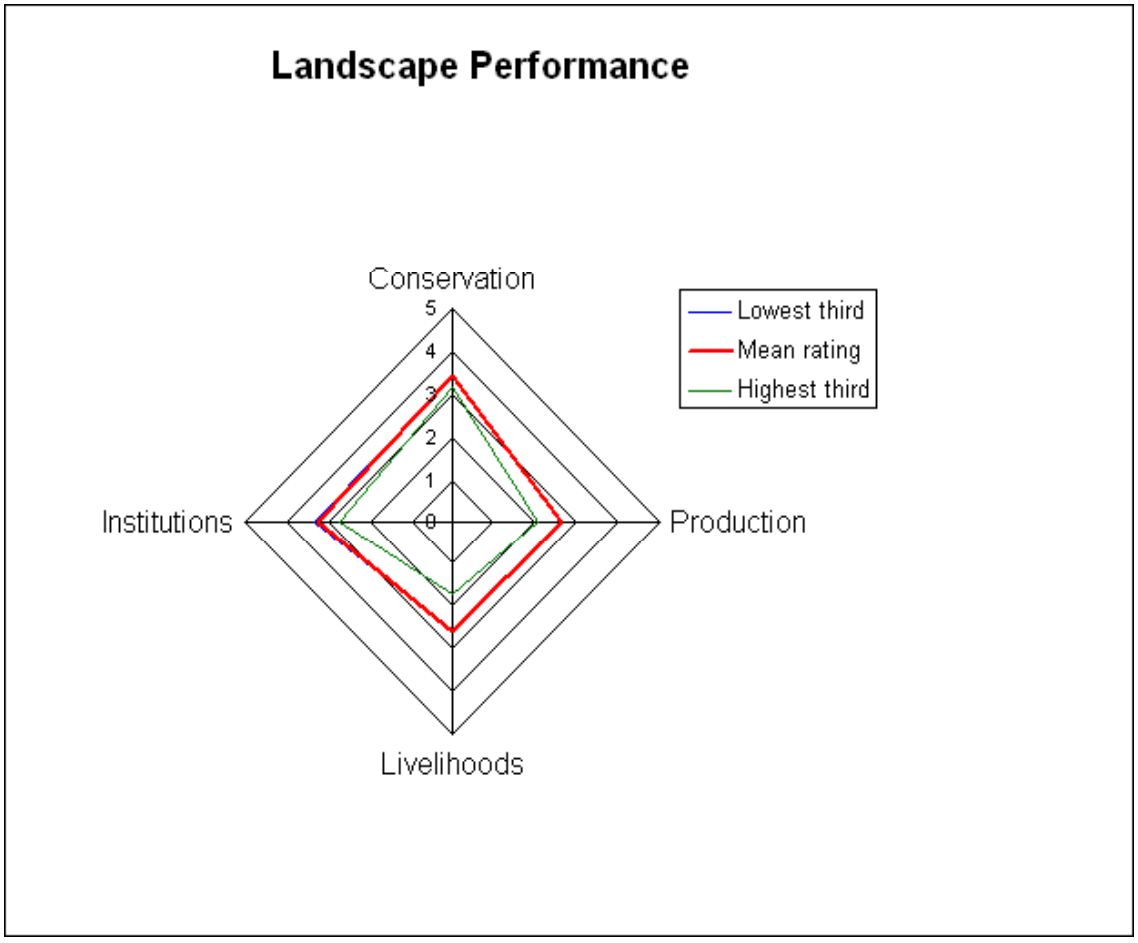
Source: Survey Results

The ratings were on a scale ranging from 1 implying very poor performance to 5 for very high performance. The resultant overall rating of 2.97 means that the landscape was performing above average. However mean ratings for the individual goals and sub-goals varied, both between and within the stakeholder groups. The ensuing discussion touches on these variations.

Performance by individual goals

Scores from each stakeholder group were fed into a data capture tool (software) designed by Ecoagriculture Partners (2007) to analyse data from the scoring exercise and to present the information generated. The means for each group of five questions were automatically calculated and a radar diagram generated (Figure 2).

Figure 2: Radar Diagram of MTA Landscape Performance Ratings



Source: Survey Results

The highest mean score (3.44) was awarded to *conservation goal*. This goal is about conserving, maintaining and restoring wild biodiversity and ecosystem services, two environmental assets which are closely linked (Buck et al. 2006). A high rating for this goal reflects the influence of effective conservation programmes on-going in the area. Ezemvelo KwaZulu-Natal Wildlife, Wildlands Conservation Trust, Peace Parks Foundation and the Department of Environmental Affairs were some of the organisations promoting natural resources conservation in the community. The high rating could also reflect optimism of community members about their capability to conserve biodiversity as well as their consciousness and possible appreciation of local protected areas (UGCCA and Ndumo Game Reserve). Observations revealed MTA landscape to be a blend of cultivated fields and areas under natural vegetation with a good potential for providing habitat for wild biodiversity and different ecosystem services. In the light of these findings and also gathering from remarks often encountered during interviews with key informants and farmers, we can say that the Mathenjwa people were pro-conservation. Such a condition is conducive to formal ecoagriculture implementation. What would be required is raising awareness and mobilising efforts towards formalising ecoagriculture and thus improve the status of the landscape. We are convinced that the community would be prepared to integrate farming and biodiversity conservation provided they acquire the necessary skills.

The landscape was also doing quite well with respect to *institutions goal,* with the second-highest mean rating (3.24). The focus for this goal is to establish and maintain institutions for integrated, on-going planning, negotiation, implementation, resource mobilisation, and capacity building in support of ecoagriculture. Institutional capacity is an explicit goal of ecoagriculture considering the essential roles of institutions and supporting organisations in promoting ecoagriculture (Buck et al. 2006). In a given landscape stakeholders can share common concerns about their natural resources but ,as noted by Bellefontaine et al. (2002), conflict of interest may exist among them. An analysis of stakeholders to MTA did not reveal serious conflicts among the stakeholders (Chitakira and Torquebiau, 2009). The roles and interests of the various stakeholders were found to be largely complementary and mainly intended to improve the wellbeing of the people while taking care of the environment. For instance, the Ingonyama Trust which is the landowner-in-law of some 2.8 million hectares of land in KwaZulu-Natal aims to administer this land for the benefit, material welfare and social well being of all members of the communities living on Ingonyama land (Ingonyama Trust Board, 2004). Health institutions, schools, the police, local municipality and local traditional authorities sometimes jointly organised gatherings for the community to commemorate the World Health Day for instance, and to raise awareness on issues affecting the people's lives. All government and private organisations in the community were working closely with the local chief and his traditional council. However any development projects intended for the area had to get approval of the tribal council, a bureaucratic process that often delayed or hampered their implementation.

In terms of *production goal* MTA landscape was rated at 2.63 which is an average performance. Production goal is to provide for sustainable, productive, and ecologically compatible agricultural production systems. Agricultural production is critically dependent on healthy ecosystems. Ecoagriculture promotes synergies between agricultural production and ecosystem functioning (Buck et al. 2006). In an ideal ecoagriculture landscape, agricultural production systems satisfy food security and nutrition requirements of producers and consumers in the region, are financially viable and resilient to disturbances, while agro-biodiversity is optimally managed to enhance and sustain agricultural production. The production systems of MTA were doing well in terms of mutual interdependence of agricultural, natural and semi-natural ecosystems which

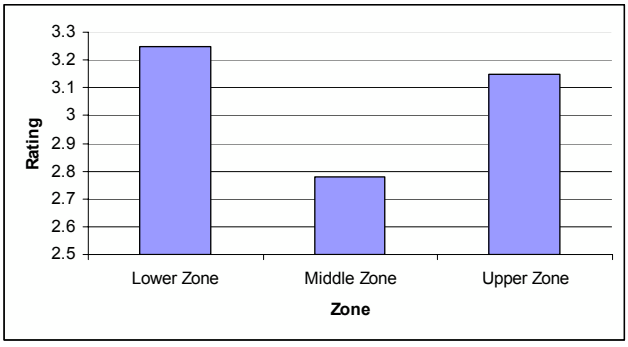
created synergies between them. In addition, the systems, partly involving traditional agroforestry, had minimal negative impact on biodiversity. However a number of factors contributed to a low performance of the landscape in this regard. Not enough had been done to empower local farmers to produce for sale. Many farmers could not afford farming inputs like seeds and draft power. Interviews revealed that crop failure due to drought was more common than ever before. Farming was not providing sufficient livelihoods for the farmers due to the area's dryness, steep topography and rocky soils. Development interventions such as ecoagriculture that encouraged diversification of livelihood into off-farm opportunities would be more than welcome.

The *livelihood goal* which is about sustaining or enhancing the livelihoods and well-being of all social groups in the landscape had the lowest score of them all. A mean score of 2.59 shows that the landscape's performance with regards to this goal was fair. Admittedly this was not an underperformance although it could be better. However such a low score for this goal reflects high poverty levels in the community, poor housing conditions, lack of employment opportunities and dissatisfaction due to lack of access to clean water, adequate health care and other basic services. The middle zone seems to be most affected of the three zones as reflected by the low scores awarded to this goal. A questionnaire survey of 170 farmers' household income levels showed that 57% of the households were earning less than US$200 per month, mainly from the Government social grants (old age pensions and child support grants). With an average household size of seven members, on average an individual member was thus living on 95 cents per day. A mere 8% were earning between $200 and $500 while 35% of the households could not say how much they earned because the incomes were too inconsistent. Income level can affect a farmer's decision to implement ecoagriculture innovations. The poorer the farmer the less likely he/she is to invest in innovations that yield returns in the long term (Holden and Shiferaw, 2002).

Ratings by stakeholder groups

There were variations in the ratings among the three different zones and among different stakeholder groups. Figure 3 shows the overall rating of the MTA landscape as perceived by participants in each zone.

Figure3: Landscape Performance Rating by Zone



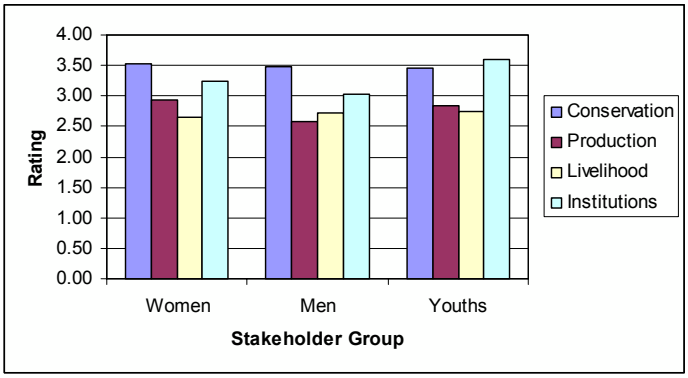
Source: Survey Results

The lower zone showed the best performance with the upper zone closely following behind. However, there was a significant difference in the rating of the middle zone and the other two zones. The lower zone was performing well in all the goals. Some explanation for this is that the area is generally flat and better serviced in terms of piped water, roads and electricity and is also

the closest zone to the two local protected areas. The upper zone has better agro-ecological conditions and is the tribal capital where the chief's homestead and the traditional council offices are situated, enabling it to perform relatively well with respect to production, livelihoods and institutions goals. The gap between middle zone and the other two zones was mainly due to a very low score on the livelihoods goal. The middle zone is the most inaccessible of the three with very steep slopes making farming difficult, scarce water sources, no high school or clinic, no electricity and roads in a very bad state.

A comparison of the ratings according to social groups from all the zones shows no significant differences (Figure 4). In the lower zone and on the plateau, women's average rating was higher than men's while in the middle zone, the opposite was true. The youths tended to be more neutral as their average rating was between that of men and women across the zones. Thus the differences in perceptions of landscape performance was less influenced by age and gender than by zone.

Figure 4: Ratings According to Social Groups

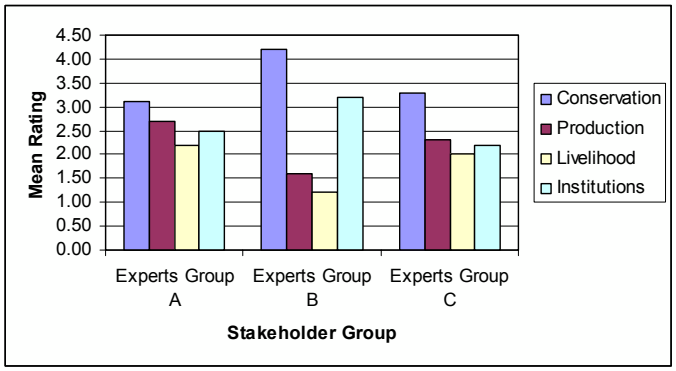


Source: Survey Results

There may be no obvious explanation for the observed trends. However, the more a stakeholder group interacted with the elements of the landscape the better their assessment. More women than men in the community were involved in farming, gathering fuel wood, fruits and other forest products. Many males from the area tended to spend most of their time away from home working in towns or mines. But there appears to be significant difference along gender lines within one zone. In the middle zone for instance, ratings by women were generally lower than by men. With an extremely rough terrain, it was mainly women who felt the difficulty of fetching water and other resources in the area.

The average scores by the 'experts' (multiple-stakeholder groups A, B and C) were all around 2.5 with very little deviations (Figure 5). Since these groups were comprised of practitioners from different backgrounds they produced more neutralised views. However, it is of interest to note an outstanding score (4.2) awarded by “Experts Group B” to the conservation goal. This group mainly comprised of practitioners in biodiversity conservation. The high score may reflect some bias by these practitioners who wanted to show that they were doing a good job with regards to promoting biodiversity conservation in the community. Awarding a low score would probably be undermining their efforts and purpose of existence in the area.

Figure 5: Ratings by Multiple-stakeholder Groups



Source: Survey Results

The purpose of the LPA was not to determine whether MTA landscape had attained some desirable end status but rather, as noted by Buck et al (2006), to find out if it was moving in the desired direction. The idea was to assess whether the management practices and resultant mosaic of land uses across the landscape were yielding progress towards the goals, individually and collectively. This outcome is hoped to inform policy and help planners and development personnel to identify which dimensions of the landscape may require attention. The 20 criteria used as a yardstick for assessing MTA landscape's performance were characteristics of a highly successful ecoagriculture landscape and thus desirable endpoints that can guide the implementation of formal ecoagriculture projects in the area.

CONCLUSIONS

The LPA presented a forum for the stakeholders to think and talk about landscapes in which it is possible to conserve biodiversity, deliver ecosystem services, sustain agricultural production and secure livelihoods of the local people. The results show that the MTA landscape was performing fairly well though it was skewed towards certain goals. Observations confirmed that MTA was indeed an informal ecoagriculture landscape that depicted a great potential for transformation into formalised landscape-level management processes involving farmers and other stakeholders. A formal and better managed ecoagriculture landscape provides better opportunities to control the performance of the four goals and ensure a balance between them. It can also support more ecosystem services and better living standards for its people.

The study proved that communal farmers have the capability and confidence to assess the ecoagriculture potential of their landscape, despite their low levels of education. This capability is based on their experience and knowledge of the area. Involving the farmers in such initial processes of ecoagriculture planning is crucial as it affects the level of acceptance and success of implementation of the associated innovations by the farmers. Research has shown that failure to involve intended beneficiaries in the technology development phase is a major reason for poor adoption rates for new technologies by farmers (Tarawali, et al. 2002). Technology developers and extension agents are encouraged to seriously consider early involvement of farmers to accord them an opportunity to make an input and to adapt the new technology to their socio-economic circumstances.

This study revealed that to some extent MTA community members were aware of biodiversity conservation. However, tangible benefits must also be realised for conservation concepts to gain popularity in the community. A question often asked by respondent farmers during interviews was: “How are we going to benefit from ecoagriculture?” It can be noted that if local dwellers are

to be responsible stewards for the maintenance of ecosystem services and the scenic beauty of the landscape, they should be rewarded for this.

The bio-physical environment of MTA would be a clear opportunity to build upon. The area's low agricultural potential would make nature-based tourism and the sustainable use of natural resources economically competitive (Smith et al. 2008). MTA is endowed with attractive scenery and a unique cultural heritage which is a mix of Zulu, Swati and Tsonga cultures. The scenery, comprising of rolling landscapes, mountains, cliffs, gorges, forested valleys and streams is attractive for viewing and the development of sport activities like hiking, mountain biking and related local skills. It is recommendable that such activities be developed and managed by the community and for the benefit of the community members.

Further research would analyse existing policies governing access to natural resources, how they may impact on ecoagriculture and which policy adjustments would be required to enable the formalisation of ecoagriculture. We hope that this paper will be of value to extension practitioners and contribute towards successful implementation of ecoagriculture innovations in Mathenjwa communal area and possibly beyond.

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ANNEX: LANDSCAPE PERFORMANCE SCORECARD

Landscape Performance Scorecard	
Directions: Score each question below by circling a number. A 1 indicates very poor performance and a 5 indicates very high performance. Circle 2 numbers together to give an intermediate score. For example, circle the 1 and the 2 together to give a score of 1.5.	
Conservation Goal: The landscape conserves, maintains, and restores wild biodiversity and ecosystem services**. Conservation Questions: C1 to C5**	
C1: Does the landscape contain an adequate **quantity** and suitable **configuration of natural and semi-natural habitat** to protect native biodiversity?	1 2 3 4 5
C2: Do natural and semi-natural habitats in the landscape approximate the **composition and structure of the habitats** historically found in the landscape?	1 2 3 4 5
C3: Are **important species** within the landscape biologically viable?	1 2 3 4 5

C4: Does the landscape provide locally, regionally, and globally important **ecosystem services**?	1 2 3 4 5
C5: Are natural areas and aquatic resources **adequately buffered** from productive areas and activities?	1 2 3 4 5
Production Goal: The landscape provides for sustainable, productive, and ecologically compatible agricultural production systems. **Production Questions: P1 to P5**	
P1: Do production systems **respond to demand** by internal (local) consumers and buyers, and by external buyers?	1 2 3 4 5
P2: Are production systems **financially viable** and can they adapt to changes in input and output markets?	1 2 3 4 5
P3: Are production systems **resilient to disturbances**, both natural and human?	1 2 3 4 5
P4: Do production practices have a neutral or positive impact on **wild biodiversity and ecosystem services**?	1 2 3 4 5
P5: Are **species and varietal diversity** of crops, livestock, fisheries and forests adequate and maintained?	1 2 3 4 5
Livelihood Goal: The landscape sustains or enhances the livelihoods and well-being of all social groups that reside there. **Livelihood Questions: L1 to L5**	
L1: Are households and communities able to meet their **basic needs** while sustaining natural resources?	1 2 3 4 5
L2: Is the value of household and community **income and assets** increasing?	1 2 3 4 5
L3: Do households and communities have sustainable and **equitable access** to critical natural resource stocks and flows?	1 2 3 4 5
L4: Are people in the landscape able to adapt to changes in human and non-human (plant & animal) **population dynamics**?	1 2 3 4 5
L5: Are households and communities resilient to **external shocks** such as flooding, draught, changes in commodity prices, disease epidemics and others?	1 2 3 4 5
Institutions Goal: Institutions are present that enable integrated, ongoing planning, negotiation, implementation, resource mobilization, and capacity-building in support of the goals of integrated landscape management. **Institution Questions: I1 to I5**	
I1: Is there effective cross-sectoral and cross-boundary planning, monitoring and decision making at landscape scale?	1 2 3 4 5
I2: Do farmers, producers, and communities have adequate capacities to contribute to effective landscape management?	1 2 3 4 5
I3: Do relationships among public and civic institutions support the management of integrated landscapes?	1 2 3 4 5
I4: Do markets provide incentives for the management of integrated landscapes?	1 2 3 4 5
I5: Do knowledge, norms and values (culture) support integrated landscape management?	1 2 3 4 5